Xerox Electronic Documentation
Solution for Xerox Printers

Xerox FS 3270 /
Xerox FS 3270 IPC
User's Guide

Doc. no. D60329 Revision 02

WARNING:
This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart B of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

EMC directive
This product observes the rules and regulations of the EMC directive. If so required, a declaration of conformity in local language stipulating the applied rules and regulations can be obtained.

Trademarks:

Preface

September 1997
This manual applies to the *Xerox FS 3270* and the *Xerox FS 3270 IPC* protocol converters, installed with firmware release S10 xxx.xxx and S91 xxx.xxx, and to any subsequent release until otherwise specified.

NOTE:
Both products: "*Xerox FS 3270*" and "*Xerox FS 3270 IPC*" will be referred to as "*Xerox FS 3270*" unless specific reference is made to the IPC functionality of the *Xerox FS 3270 IPC*.

The *Xerox FS 3270* supports Coax, Centronics and RS232 inputs. The output is centronics. In FSL mode, the RS232 can be config ured to be either input or output (See Section 2.1. for further details).

The manual describes how the *Xerox FS 3270* is connected and operated. Read it before you start using the protocol conver ter, and keep the manual in a safe place for future referen ce.

It is assumed that the reader has a basic knowledge and under standing of IBM computer systems, especially the IBM *3270 Information Display System*. It is also assumed that the reader has adequate knowledge of the printer which is going to be connected to the *Xerox FS 3270 .*

The *Xerox FS 3270* can be used with most ASCII printers.

Related Manuals

☞ **Xerox FS 3270 IPC**
"IPDS Programmer's Guide"
i-data Document no. D60253

☞ **both converters**
"Laser 3270, Programmer's Guide"
i-data Document no. D62078

"IBM 3268 Printer Models 2 and 2C Description"
IBM Order No. GA27-3268

Contains information on the IBM *3268* printer which *Xerox FS 3270* emulates.

Table of Contents

1. Installation Requirements

This chapter gives you a short description of the *Xerox FS 3270* and its installation requirements.

1.1. Introduction to Xerox FS 3270

The *Xerox FS 3270* is a protocol converter which enables any printer (or other output device) to be connected to an IBM computer sys tem.

The printer or device should have either an *RS 232/V24* serial connector, or a *Centronics* parallel connector in order to be con nected to the *Xerox FS 3270* protocol converter.

The IBM system should use the *3270* type terminals. See *Section 1.3, Supported Control Units*, for information on the IBM systems to which the *Xerox FS 3270* connects.

PCL or FSL output driver

The output driver selection switch on the rear panel of the box al lows you to change from PCL (factory default) to FSL if needed:

The PCL Driver (Default Driver)
If you wish to operate in **PCL** mode, the box is ready to operate as it is when delivered. *It is important that you do not change the position of the switch*. When used with certain older IBM controllers, the FSL function Y8 may have to be set to obtain the correct SCS printer language. For further programming of the box, you are referred to the Laser 3270 Programmer's Guide; D62078, subpart D62030.

The FSL Driver
To use a non-PCL printer or connect to a serial input port on a printer, you have to set the switch to **FSL/alternate** *For this, you must follow the instructions in the section "Changing the Printer Driver."* The *Xerox FS 3270* box is compatible with the Xerox 3270 box. For program ming the internal setup of the box you must refer to the Laser 3270 Programmer's Guide; document no. D62078, subpart D62071.

1.2. Xerox FS 3270 Features

The *Xerox FS 3270* protocol converter gives you the following features:

- *Autoconfiguration* of printers with minimum PCL4 and PJL, supporting IEE1284, Bidirectional Centronics Communication. This automatically configures
  - Paper size
  - Paper tray
  - Duplex (IPDS)
  - Memory (IPDS)

To enable the automatic configuration, use function 119.

☞ **Non-IPC**

IBM 3268 is factory default

- *IBM 3287, 3268 /4214 emulations*
- *Support of the SCS (LU1) and 3270 data stream (LU0 or LU3) modes* including FMH data streams as required by the host system.
- All *IBM RPQs*
- Parallel and serial output in FSL mode
- Parallel and serial output in PCL mode
- *Up to 8 user strings* of variable length can be transmit ted to the printer from the *Xerox FS 3270* - automatically at power on and before and after Local Copy from the host system.
- Automatic input sharing between Coax, Centronics and RS-232 input ports.
- Coax FSL setup via share port
- Flash prom allowing downloading of new firmware via the coax or the centronics port.
- Support of ida PSS
- Direct connection to IBM cabling system via dbs.

☞ **IPC**

- IPC support - IBM 4028 and 3812 or 3816 emulation.

- Non-IPC support via the installed i-data interface card, with full emulation of IBM3268/3287/4214.
- Support of the ida PSS software package
- Parallel input and output
- Serial input
- Support of the i-data Function Selection via the Line (FSL) facility in non-IPC mode.
- Automatic input sharing between Coax, Centronics and RS-232 input ports.
- Flash prom allowing downloading of new firmware via the centronics port.
- Multiple VPA (Valid Printable Area) check options available.
- IM Smoothing (3812 and 3816 emulations).

1.3. Supported Control Units

The *Xerox FS 3270* connects to the following control units:

- IBM *3174* — All models
- IBM *3274* — All models (A-adapter)
- IBM *3276* — All models
- IBM *4321/31/41/61* — All models
- IBM *81XX* — Via *327x* controllers or *8775* terminals
- IBM *4701/4702* — Through the *Device Cluster Adapter*
- IBM *8775* — Through *3287* attachment RPQ

All equivalent *3274/76* PCM controllers, subject to validation by *i-data*. Contact your dealer for more information.

1.4. Items Supplied...

Please first check that you have received the following items:

Xerox FS 3270

- *Xerox FS 3270* converter
- Parallel printer cable
- Wall plug power supply
- Documentation kit

Xerox FS 3270 IPC

- Same contents as above except converter comes equipped with *IPC module*

In addition the following i-data accessories can be used:

- Parallel output cable/printer cable (Order no. 999 023-030)
- Parallel input cable (Order no. 999 022-030)
- Serial input cable (Order no. 999 010-030)
- Serial output cable has to be ordered especially for the printer you are going to connect. Please contact your i-data dealer for more details (See also Appendix A).

IPC Upgrade Kit

- IPC option, Xerox IPC upgrade module (Order no. 293011-001)

1.5. Changing Paper Size Default (US/Europe)

When you receive the *Xerox FS 3270*, the interface is already in the box and is ready to connect to the system and to the printer. From the factory, the *Xerox FS 3270* interface is set up for either US (Letter) or European (A4) paper size depending on what you specified when ordering the *Xerox FS 3270*.

In the event that you should have to change this setting, please contact your point of purchase for instructions.

1.6. Operating Environment

The *Xerox FS 3270* protocol converter can be installed in the following environment:

- Temperature range from 10 ° *to 40° Centigrade*
- Humidity between 8% to 80% non-condensing
- Power supply: *120 and 230 volt version: max. 21.5 VA*

WARNING!
The equipment must be grounded. Operation without a ground may cause exposed metal parts to carry main voltage. This can lead to malfunction and personal injury

2. Installation and Connections of the Xerox FS 3270

This chapter starts with an overview of the functionality of the rear panel. Then follows a description of how you connect the *Xerox FS 3270* box to **the printer** and **the system**

NOTE:
Before you start the installation, make sure that you set the rotary switch at the required emulation. See SWITCH B/A/T in section 2.1. below.

2.1. The Rear Panel

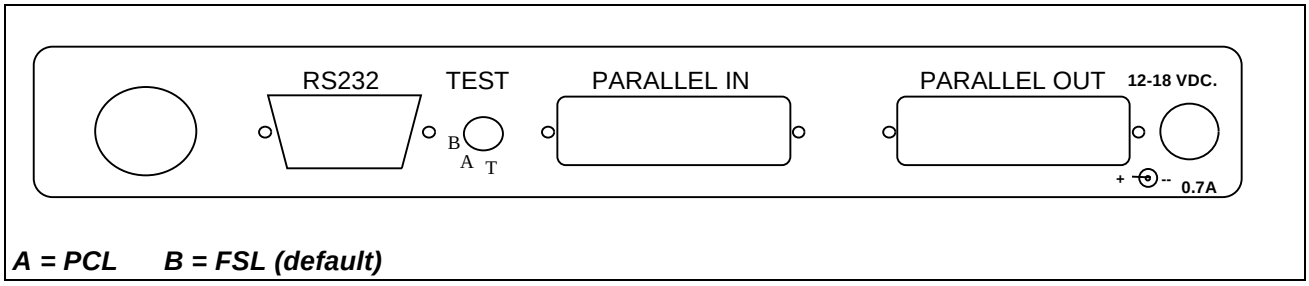

Fig 2-1 Xerox FS 3270 Rear Panel

COAX
The coax cable is connected to the host which communicates in accordance with the 3270 protocol.

PARALLEL OUT
The parallel output port is connected to the parallel/Centronics in put port on the target printer (standard parallel out cable supplied with printer should be used).

PARALLEL IN
The parallel input port can be connected to the parallel/Centronics out put on a PC or similar source able to share the printer with the host. For this connection you need a spare part cable ending in a 25-pole D-Sub connector (i-data order no. 999022-030).

ROTARY (TEST) SWITCH
Testing and emulation switch which is read at power-up. Default emulation is **PCL (A)**.

PCL printer driver = A position. (Default is *outside* of B, A & T position)
FSL printer driver = B position.

(The "**T**" position is used for testing purposes. See the section on testing later on in the manual.)

CAUTION:
When delivered, the switch is in neither the B, A or T position, but is nevertheless set to PCL as a default. To change the driver, it is very important you follow the instructions below in the "Changing the Printer Driver" section. Note that operating position is always *away* from the B, A or T position.

Changing the Printer Driver

To change from PCL to FSL driver or vice versa, first of all the rotary switch *has* to be in position T *at power on*. The current printer driver will be indicated on a printout. The actual selection of printer driver is then made by turning the rotary switch to position A (PCL) or B (FSL). The new position will be indicated as either "PCL" or "alternate printer driver" (FSL) on a second printout. When the correct position is obtained, turn the rotary switch *away* from the A, B or T positions (any other position will do). Power the unit **off** then **on** again. The new driver is now active.

NOTE:
Emulation change results in the interface being reset to factory default.

SERIAL (IN/OUT) RS232

The serial port can be configured either as input or as output.
Default configuration is input

Serial input

The serial port is connected to the serial output on a PC or similar source able to share the printer with the host.

For this connection you need a spare cable ending in a 25-pole RS connector (i-data order no. 999010-030).

To use RS input Function 24, the "Data Input/Output Port Select" must be set to zero (which is factory default).

On the PC you must also make the following settings to match the default settings on the box:

Baud rate	= 9600
Number of data bits	= 8
Parity	= None
Stop Bits	= 1

If this is not possible, you must change functions 15, 16, 17 and 18 on the box to match the PC's values.

NOTE:
Programming of functions 15, 16, 17, 18 and 24 is not possible via the serial port. These functions have to be programmed either via the coax or via the parallel input port.

2.2. Upgrading to IPC

If you need to upgrade your Xerox FS 3270 with the IPC module, please follow these instruction before proceeding with the installation.

1. Unscrew the 4 screws from the bottom of the converter.

2. Place you hands on each side of the box, bottom facing down and the rear panel facing you. Carefully press open the top cover of the converter.

3. Place the IPC module (main component side facing up) on the PCB of the box. *Note that the connector has to be placed on top of the PCB's connector (to the right on the PCB).*

4. Make sure the plastic supports fit in the holes of the IPC module.

5. Press the module gently into position and, while still facing the rear panel, place the top cover precisely above the bottom cover so that all edges are aligned. Press the top cover gently into a locked position.

6. Re-insert the screws and fasten.

7. Now proceed to the actual installation of the converter to the printer and the system.

2.3. Connecting the Xerox FS 3270 to the Printer

CAUTION:

All connections to the *Xerox FS 3270* protocol converter should be made while the power is switched OFF.

2.3.1. Connecting via Centronics output

Connecting the *Xerox FS 3270* to the printer is simple and should cause no problems if you just follow these steps:

1. Check that printer's parallel input port is available on printer.

2. Connect the cable supplied with the converter between the printer's parallel port and the protocol converter's PARALLEL OUT port.

3. Power ON the printer and the *Xerox FS 3270* box.

4. Make a settings printout by turning the rotary switch to the “T” position and back to the original position. This will generate a **settings printout** The CU indicator will start flashing for approximately 30 seconds.

Compare the test printout (FSL or PCL printout) with the relevant printout in *Chapter 10, Test Printout .*

When the printout has the same format as shown in *Chapter 9*, the connection between the *Xerox FS 3270* converter and the printer is working correctly.

Keep the settings printout together with this manual for future reference

If the printout format does not match the test printout in Chapter 9 or if nothing was printed, this means that the printer setup does not match the protocol converter setup. Contact your systems support personnel or your *i-data* dealer.

5. When the printout is in order, you proceed to section 2.3, *"Connecting Xerox FS 3270 to System".*

2.3.2. Connecting via RS-232 output

Note: This does not apply for Xerox FS 3270 IPC

1. Please note that if you change switch setting for emulation, the box will be reset to factory default.

2. The cable you need for connecting the serial output device to the serial port on the box must be ordered from your i-data dealer especially for the serial output device.

3. Function 24 "Data Input/Output Port Select" has to be set to 1.

If possible, the serial output device you are connecting has to be set to Baud rate = 9600, Number of data bits = 8, Parity = None and Stop Bits = 1 to match the default settings of the box. If this is not possible, you must change functions 15, 16, 17 and 18 on the box to match the settings of the serial output device.

NOTE:
Programming of Functions 15, 16, 17, 18 and 24 is not possible via the serial port. These functions have to be programmed either via the coax port or via the parallel input port.

For full details on Y functions, please see the Laser 3270 Programmer's Guide; Document No.: D62078, subpart D62071.

4. Power on the printer and the *Xerox FS 3270* box.

5. Make a settings printout by turning the rotary switch to the "T" position and back to the original position. This will generate a **settings printout** The CU indicator will start flashing for approximately 30 seconds.

   Compare the test printout (FSL or PCL printout) with the rele vant printout in *Chapter 10, Test Printout.*

   When the printout has the same format as shown in *Chapter 9*, the connection between the *Xerox FS 3270* converter and the printer is working correctly.

Keep the settings printout together with this manual for future reference.

6. If the connection between the printer and the protocol con verter does not work properly, the reason is probably that the Y function 24 is not set to serial out or that the functions 15, 16, 17 and 18 do not match the values of the printer.

   If the printout format does not match the test printout in Chapter 9, or if nothing was printed, this means that the printer setup does not match the protocol converter setup. Contact your systems support personnel or your *i-data* dealer.

7. Power the *Xerox FS 3270* OFF and back ON and check that all indicators light up momentarily. (The indicators are described in *Section 3.1, Indicator LEDs*).

8. Proceed to section 2.3 *Connecting Xerox FS 3270 to the System*.

2.4. Connecting the Xerox FS 3270 to the System

After a successful test printout has been generated to ensure that the connection between the *Xerox FS 3270* converter **and the printer** is working correctly (see previous section), you are now ready to connect the *Xerox FS 3270* **to the system**

CAUTION:

All connections to the *Xerox FS 3270* protocol converter should be made while the power is switched OFF.

1. Turn off the power and connect the *Xerox FS 3270* to your host system using the coax cable.

2. When the connection has been made, turn power **ON** and check that the **CU** and **READY** indicators turn **ON**. When it does, you have completed the installation procedure and are ready to operate the protocol converter as described below.

What if the CU Indicator fails to turn on?

If the **CU** indicator does not turn **ON**, this means that there is no communication with the control unit. You should check the following:

a. The coax cable connection from the control unit to the *Xerox FS 3270 .*

b. The control unit (is it powered up etc.)

c. Is the control unit supported by the *Xerox FS 3270* (See *Section 1.3, Supported Control Units*, for a list of supported control units).

If all three (a. b. and c.) are in order, contact your systems support personnel or your dealer.

PCL driver:

The default configuration of the interface will suffice for most application programs and uses. You should only change the configuration if you have special requirements.

If you should wish to change the configuration, the options may be set from the line as described in the Programmer's Guide; document no. D62078, subpart D62030

FSL Driver

With the FSL driver you have selected an unprogrammed printer driver. You have to program the internal setup of the box to suit your printing requirements. See Programmer's Guide; document no. D62078, subpart D62071 for further details.

2.4.1. Testing

1. Power the unit ON.

2. Turn the rotary switch to the “T” position and back to the original position. This will generate a **settings printout**

3. When the switch has been turned back to its original position, the CU indicator will start flashing for approximately 30 seconds.

4 Turn the rotary switch to the “T” position once again *while the CU indicator is flashing*. The unit will now enter **Online HEX dump** mode. The dump mode is terminated by turning the switch away from the “T” position and back into the “T” position.

   NOTE:
   The CU indicator will be blinking rapidly while the rotary switch is in the “T” position. This is an indication that the “T” position is not a valid permanent position.

5. Compare the test printout (FSL or PCL printout) with the rele vant printout in *Chapter 10, Test Printout.*

Keep the settings printout together with this manual for future reference.

Settings Printout at Power-on (PCL mode only)

A settings printout can also be generated at power-on by activating function Y120.

NOTE:
The Rotary Switch has to be activated at power on in order to change from FSL to PCL or back.

2.4.2. Timeout

The *Xerox FS 3270* enables printer sharing between the system and a PC. For this purpose it is possible to specify a timeout period.

If the printer is receiving input on the parallel port, for example, and there is a break in the transmission of data, the other input ports will not be polled for the period speci fied.

The factory default timeout is 20 seconds. The timeout may be changed to suit your requirements. This is done by sending a new setup to the *Xerox FS 3270* input port where you want it to take effect. See *Chapter 5. Specifying Timeout*.

When specifying the timeout it is also possible to specify a user string. A user string may be used for changing from one symbol set (e.g. Roman 8) to another (e.g. IBM-PC8), for example.

NOTE:
Settings on the coax input port are automatically reestablished after another input port has been using the printer.

On the parallel and RS input port, you have to program the required setup yourself.

For more detailed information on the commands required, see *Chapter 4, Specifying Timeout*.

3. Operation of Xerox FS 3270

The *Xerox FS 3270* top panel has been designed to register the operation of the box via the four following indicator LEDs :

- CU (contact to Control Unit)
- PAR (parallel input)
- SER (serial input)
- READY (printer)

3.1. The Indicators of the Xerox FS 3270

CU (Contact with Control Unit)

This indicator LED has 3 states:

State	***Indication***
ON	Contact with the control unit.
BLINKING	1. Contact with the control unit, and data pending in the *Xerox FS 3270* buffer. 2. Indicates that the TEST switch has been activated and the box is ready to enter on-line HEX dump mode 3. The CU indicator will be blinking rapidly while the rotary switch is in the “T” position. This is an indication that the “T” position is not a valid permanent position.
OFF	No contact to the control unit, or the contact has been broken for more than 1 minute.

PAR (Parallel input)

The indicator LED has 2 states:

State	***Indication***
ON	Indicates that the box is processing data from the Centronics parallel port
OFF	Indicates that the box is idle or processing data from the coax/RS inputs

SER (Serial input)

The indicator LED has 3 states

State	***Indication***
ON	Indicates that the box is processing data from the RS-232 Serial input
BLINKING	Indicates that the box has defined the RS-232 as output for the box.
OFF	Indicates that the box is idle or is processing data from the coax/Centronics inputs.

READY (Printer Ready)

The indicator LED has 3 states:

State	***Indication***
ON	Indicates that the connected printer is ready; i.e. that printer's "Select" condition is active and the "PE" signal is inactive. If the connected printer is an RS 232 printer, the ready validation is done by the "DTR" signal.
OFF	Indicates that the connected printer is **not** ready for data input.
BLINKING	Indicates a **not**-ready condition

4. Specifying Timeout

In order to specify the timeout for a specific input port, an FSL (*F*unction *S*election via the Line) sequence must be sent to the port in question. To do this a temporary Escape (ESC) Character must be defined first. This is done in the following way:

```
&&??<character>
```

The sequence "&&??%" will define "%" as the ESC Character.

Timeout is specified in FSL Function 100 . This function has the following syntax ("%" is the ESC Character):

```
%Y100,<timeout>[,user string]%
```

Factory default = 20 seconds

Timeout:	0 to 255 indicating number of seconds
User string:	*Optional* - string in HEX to be sent to the printer before transmission of data, when the printer is selected by the share unit. If function 100 is sent to the coax, a user string number can be defined instead of a HEX string. The user string then has to be defined in function 61.

NOTE:
The Timeout string must be written in ONE line (see example overleaf).

The user string and settings will only be sent if a share condition has occurred.

NVRAM= Non-volatile RAM

The new setup must be saved in the NVRAM with the following command ("%" is the ESC Character):

```
%X1
```

The FSL string above was split up into several lines for reasons of clarification to simplify the explanation of the different functions. Below is an example where the FSL string is typed in one line.

Example:

```
&&??%%Y100,30,1B,45%%X1
```

The FSL string above has the following effect:

- Defines % as ESC character
- Sets timeout to 30 seconds
- Send 1B 45 HEX (RESET) before the next data transmissi on.
- Saves setup in the NVRAM.

NOTE:
FSL 100 works on the port it is sent to. If it is sent to the parallel or RS input port, the string containing the Function 100 programming will be printed when it is sent to the *Xerox FS 3270* .

5. idaSetup - IPC Programming

NOTE:
This chapter only applies to the converter when mounted with an IPC module.

idaSetup is a program developed with the purpose of setting up the wide range of IPC protocol converters via a PC share port or from a host.

For details on how to configure the IPC parameters for the *Xerox FS 3270 IPC* using the program idaSetup, see the separate documentation for this, "IPDS Programmer's Guide", doc. no. D60253. The manual is available as an electronic document.

6. IRQ Handling

This section describes how to recover from various IRQ conditions.

- Paper jam
- Out-of paper
- Stacker full

The printer will recover from these conditions without loss of data ***as long as you do not power off the printer***.

- Printer Not READY

The *Xerox FS 3270 IPC* will detect if the printer is NOT READY and will interrupt data transmission to the printer. If the printer is OFFLINE (i.e. not READY) there will be no data loss ***as long as you do not power off the printer.***

- Out of toner

This condition is indicated by the printer's front panel. If printing continues, the print quality may not be acceptable. There will be no loss of data ***as long as you do not power off the printer*** .

- Door Open

This condition is indicated by the printer's front panel. There will be no loss of data ***as long as you do not power off the printer***

- Printer Power Off

You should not power off the printer, unless you power off the box as well. If only the printer is powered off, unpredictable results may occur.

7. Programming Xerox FS 3270 - non-IPC

The *Xerox FS 3270* works using approximately 60 internal Setup Functions (FSL Functions). When the protocol converter has been installed and connected to a printer, you may have to consider the use of these setup options.

FSL setup functions can be sent either from your IBM system or from a PC.

PCL Driver (Default)

If you have decided to run the *Xerox FS 3270* in PCL mode (see Chapter 1), the *Xerox FS 3270* is ready to operate after you have completed the installation procedure. The factory default setup will meet the demands of most host systems and users, and special programming is therefore normally not required.

However, special circumstances may require changes in the pro gramming of the box. For full details on this please see the "Laser 3270 Programmer's Guide; D62078, subpart D62030. In the Pro grammer's Guide you will find an extensive description of the FSL Functions with notes, comments and examples.

FSL Driver

If you have decided to run the *Xerox FS 3270* in FSL mode (see Chapter 1), you have just selected an unprogrammed printer driver and you need to program any further settings of the box using FSL functions. The "Laser 3270 Programmer's Guide"; Document No. D62078, subpart D62071 gives you full details on how you do this.

On the following pages you will find a list of the functions available in PCL mode and FSL mode respectively.

7.1. Setup Functions Supported in PCL mode

Y1	Set IBM Buffer Size
Y2	Set Default LPI
Y3	Set Default CPI
Y4	Set Default Line Spacing
Y5	Set Default Page Length (MPL)
Y6	Set Default Max. Print Position (MPP)
Y7	Set Case (Mono,Dual)
Y8	Set LU1 Language
Y10	Set Page Format
Y11	Set Default Paper Path
Y12	Set Default Paper Size
Y13	Line Overflow Condition
Y14	Enable Graphics Option (idaAFP)
Y15	RS-232 Baud Rate
Y16	RS-232 Word Length
Y17	RS-232 Parity
Y18	RS-232 Stop Bit
Y19	Set Simplex/Duplex
Y22	Printer Driver Selection
Y24	Serial Input/Output
Y25	FF Before Local Copy
Y26	FF After Local Copy
Y27	NON-SCS Print Image
Y28	NON-SCS, CR at MPP+1
Y29	NON-SCS, NL at MPP+1
Y30	NON-SCS, Valid FF Followed by data
Y31	NON-SCS, Valid FF at end of buffer
Y32	NON-SCS, FF Valid
Y33	NON-SCS, Automatic Func. at end of job
Y34	Last LF on page sent as FF
Y36	Suppress IBM control codes (parameters 0 and 1)
Y37	IBM Printer Emulation Select (parameters 0,1,2 & 4)
Y38	IBM Communication Feature (Query, EAB)
Y41	Generation of NL at EM
Y44	Suppress CR and SP
Y46	Set IRQ Timer
Y47	ESC Mode Selection
Y48	Set Permanent ESC Character
Y49	Restrict access of NVRAM settings
Y50	FF After Time Elapse
Y51	User-defined string(s) at Power-on
Y57	User-defined string before local copy
Y58	User-defined string after local copy
Y59	Bar Code Type Definition
Y60	Font Link

Y61	Setup for user-defined strings (parameters 0 - 7)
Y62	Setup for IBM defined strings
Y63	Define Logo
Y72	Reset Translate Table
Y73	Select Translate Table
Y74	Printer Symbol Set Definition Strings
Y75	Overwrite Translate Table
Y77	Reset APL Translate Table
Y78	Select APL Translate Table
Y79	ida 820 AFP Font Offset
Y80	Overwrite APL Translate Table
Y88	Margin Definition (idaAFP only)
Y89	Enable Margin Definition
Y90	Define User Escape String
Y91	Font Definition
Y92	Font Point Size Definition Strings
Y93	Font Attribute Definition
Y94	Font Typeface Definition
Y96	Font Change Simulation
Y98	Automatic Page Orientation
Y100	Port Sharing Option
Y110	idaAFP Orientation Support
Y111	idaAFP Duplex Support
Y112	idaAFP PCL5 Font Support
Y113	idaAFP Early Print Complete
Y114	idaAFP Colour Support
Y115	idaAFP Miscellaneous
Y118	Expanded Printable Area
Y119	Autoconfiguration Select
Y120	Print Test Page at power on

ESC Features:

%% Special transparent feature (Multiple paired Hex transparent).
e.g.: %%*1B45%*

where % is the defined ESC character.

% Special transparent feature (Single paired Hex transparent).

where % is the defined ESC character.

Send Logo:

L Send logo (Logo is defined in Y63).

TEST functions (T-Functions):

T1	Offline Hex Dump (PCIA Dump)
T2	Online Hex Dump
T3	Online ASCII Hex Dump
T4	Print out Settings
T5	Printout Character Set
T6	Cancel Online ASCII Hex Dump

User Settings Functions (X-Functions):

X1	Store Settings in Permanent Storage
X2	Restore Settings from Permanent Storage
X3	Restore Factory Default Settings
X4	Restore Settings from Permanent Storage
X5	Restore Settings (SCS settings will be retained)

Engineering Functions:

Y249	Enable Engineering Mode

Z Functions:

Zn	Send user-defined string

W Functions:

Wn	Printing Barcodes (defined in Y 59)

7.2. Setup Functions Supported in FSL mode

Y1	Set IBM Buffer Size (parameters 2,3,4 & 5)
Y2	Set Default LPI (parameters 6 & 8)
Y3	Set Default CPI (parameters: 10, 12, 15 & 16)
Y5	Set Default Page Length (MPL)
Y6	Set Default Max. Print Position (MPP)
Y7	Set Case (Mono,Dual)
Y8	Set LU1 Language
Y9	Set Default Print Quality (parameters 2 & 3)
Y11	Set Default Paper Path (parameters 1, 2 & 3)
Y14	Enable Graphics Option (idaAFP) (parameters 0 & 1)
Y15	RS-232 Baud Rate
Y16	RS-232 Word Length
Y17	RS-232 Parity
Y18	RS-232 Stop Bit
Y24	Serial input/output
Y25	FF Before Local Copy
Y26	FF After Local Copy
Y27	NON-SCS Print Image
Y28	NON-SCS, CR at MPP+1
Y29	NON-SCS, NL at MPP+1
Y30	NON-SCS, Valid FF Followed by data
Y31	NON-SCS, Valid FF at end of buffer
Y32	NON-SCS, FF Valid
Y33	NON-SCS, Automatic Func. at end of job
Y34	Last LF on page sent as FF
Y35	FF from system sent as FF or LF's
Y36	Suppress IBM control codes
Y37	IBM Printer Emulation Select
Y38	IBM Communication Feature (Query, EAB)
Y39	Suppress Empty Forms
Y44	Suppress CR and SP
Y46	Set IRQ Timer
Y48	Set Permanent ESC Character
Y49	Restrict access of EEPROM settings
Y50	FF After Time Elapse
Y51	User-defined string(s) at Power-on
Y52	User-defined string(s) at Printer Power down/ Printer Error
Y53	User-defined string before Error Message
Y54	User-defined string after Error Message
Y55	Barcode type select
Y56	Barcode Entry
Y57	User-defined string before local copy
Y58	User-defined string after local c opy
Y61	Setup for user-defined strings

Y62	Setup for IBM defined strings
Y63	Define Logo
Y71	Create Translate Table
Y72	Reset Translate Table
Y73	Select Translate Table
Y75	Overwrite Translate Table
Y76	Create APL Translate Table
Y77	Reset APL Translate Table
Y78	Select APL Translate Table
Y80	Overwrite APL Translate Table
Y88	Margin Definition (idaAFP only)
Y89	Enable Margin Definition (idaAFP only)
Y90	Define User Escape String
Y100	Port Sharing Option
Y120	Settings Printout at Power Up

ESC Features

%% Special transparent feature (Multiple paired Hex transparent).
e.g.: %%*1B45%*

where % is the defined ESC character.

% Special transparent feature (Single paired Hex transparent).

where % is the defined ESC character.

Send Logo:

L Send logo (Logo is defined in Y63).

TEST functions (T-Functions):

T1	Offline Hex Dump (PCIA Dump)
T2	Online Hex Dump
T3	Online ASCII Hex Dump
T4	Print out Settings
T5	Printout Character Set
T6	Cancel Online ASCII Hex Dump

User Settings Functions (X-Functions):

X1	Store Settings in Permanent Storage
X2	Restore Settings from Permanent Storage
X3	Restore Factory Default Settings
X4	Restore Settings from Permanent Storage

Engineering Functions:

Y249	Enable Engineering Mode

Z Functions:

Zn	Send user-defined string

8. FSL Setup via Xerox FS 3270 Serial or Parallel Port

FSL support on the serial or parallel input port is defined by temporary escape character, FSL Y100 and ESC X1.

The Engineering Function Y249 (FSL setup via share port) allows you to program the FSL parameters for coax input directly via the serial or parallel input port.

When FSL programming is preceded by FSL Y249, the *Xerox FS 3270* will interpret the FSL as sent via the coax line.

Example:

&&??%%Y100,10,'SHARESTRING'%%X1

Sent to the serial or parallel input port, this command string will program FSL Y100 on the serial or parallel input port it was sent to.

&&??%%Y249,PASSWORD%%Y100,10,'SHARESTRING'%%X1

Sent to the serial or parallel input port, this command string will program FSL Y100 on the coax port.

In the description below, it is assumed that you know how to define an escape character (this must be done before you can use the Y249 function).

Character conversion
When the engineering function is received, all the following characters in the ***Xerox FS 3270*** are converted to **LU3** characters.

The characters are now interpreted as received by the coax line.

This functionality is automatically deactivated after timeout on the share port used.

NOTE:
To ensure correct conversion of the characters following the engineering function, use characters existing in the symbol set PC-850 for coax.

Activating the Y249 Engineering Function

Before the Engineering Function can be activated, an Escape character must be defined (see section 5 for details on how to do this).

If you have defined % as Escape CHARACTER, you activate the engineering function by typing:

%Y249,n%

n = password. As this is sensitive information, system operators can contact their i-data distributor for password details.

Deactivating the Y249 Engineering Function

The function will be deactivated automatically after timeout on the share port used (timeout is defined in Y100 Port Sharing Option).

Limitations when Y249 is active

Characters not present in the PC-850 symbot set (Coax) can still be sent in hex notation.

Example:

If you need to define user string 1 containing a PCL reset, then define the following:

&&??%
%Y249,PASSWORD%
%Y61,1,1B45%
%X1

8.1. Updating Firmware

The *Xerox FS 3270* firmware (complete firmware) may be updated either via the coax line or via centronics input port. For further in formation please contact your i-data distributor.

If errors are detected, the downloading will be terminated and an error message will be printed if possible. If serious errors occur during programming, the firmware has to be downloaded via the share port.

The downloading of firmware is considered complete if no data is received within 30 seconds. The interface will then make a soft re set.

NOTE:
In case of damaged FLASH PROM, try the following procedure:
Boot Download of firmware:

1. **Turn the power off**
2. **Place the rotary switch in the “B” position**
3. **Turn the power on and note that the READY LED is lit**
4. **Download the boot firmware (Syntax: “Copy 140.xxx.1 /b”)**
5. **Download the new firmware. When download is completed and the FLASH PROM is programmed, the LED will start flashing**
6. **Turn off the power and set the rotary switch in a position different from “A”, “B” or “T” before turning on the power again.**

9. Error Messages

Errors fall into two categories: the operator-recoverable errors and the non-recoverable hardware errors.

The error messages listed below are all printed out on paper when the error situation arises (provided the printer is on-line).

You correct the errors from the host system in accordance with the error messages given.

9.1. Recoverable Errors

The error messages are listed in alphabetical order below.

BARCODE IS DISABLED
ESCAPE SEQUENCE ERROR
NOT NUMBER

ESC X IS WRONG

ESCAPE SEQUENCE ERROR

ESCAPE SEQUENCE ERROR
NUMERICAL OVERFLOW

ESCAPE SEQUENCE ERROR
CREATE TRANSLATE TABLE
OUT OF RANGE. MAX 8' 13

ESCAPE SEQUENCE ERROR
NO TRANSLATE TABLE
CREATED

ESCAPE SEQUENCE ERROR
NO TRANSLATE TABLE
APL
CREATED

ESCAPE SEQUENCE ERROR
TRANSLATE TABLE LOAD
CHARACTER IS OUT OF RANGE
VALIDATION VALUE IN NVRAM IS WRONG
VALUES ARE NOW OVERWRITTEN WITH FACTORY
DEFAULTS
ESCAPE SEQUENCE ERROR
ILLEGAL SEPARATOR

FUNCTION (NO) IS NOT SUPPORTED
ESCAPE SEQUENCE ERROR
ESC Y

MULTISTRIKE STRING IS TOO LONG

Not in engineering mode

NVRAM VERIFICATION ERROR IN CELL

PARAMETER IS OUT OF RANGE

PASSWORD IS NOT ACTIVE

SYNTAX ERROR IN CALL. FUNC = (NO)

THE CONTENTS OF NVRAM HAS BEEN DAMAGED
VALUES ARE NOW OVERWRITTEN WITH FACTORY
DEFAULTS

There is no password

THE NVRAM IS ALREADY LOCKED, PASSWORD IS IGNORED

THE PASSWORD TO OPEN NVRAM AREA IS WRONG

THE PASSWORD IS TOO LONG

THE SELECTED BARCODE IS NOT SUPPORTED

The NVRAM is locked

The dynamic area is locked

The checksum in the NVRAM is wrong

THERE IS NO SPACE LEFT
IN THE DYNAMIC AREA

THE USER ADDRESS STRING IS TOO LONG

TERMINATOR NOT ACCEPTED
ESC Z IS WRONG

Validation value in NVRAM is wrong

YOU CANNOT LOCK THE NVRAM
BEFORE YOU HAVE PROGRAMMED IT

9.2. Non-Recoverable Hardware Errors

The following recovery attempt can be made:

- Turn power **OFF** for 10 seconds and then **ON** again. If the problem persists, seek technical assis tance.

The non-recoverabel error messages consist of this message:

HARDWARE MALFUNCTION. Call for service.

followed by one of these diagnostic messages:

COAX IF ram error

Wrong data in selftest

Wrong word in selftest

Nothing received in selftest

8085 ram error

Rom check sum error

Response missing from COAX IF

Invalid test response from COAX IF

10. Test Printouts

PCL Test Printout

Xerox FS 3270 PCL, Version: S10 xxx.xxx /00963001

```
Boot ID: 80010004
Temporary Escape code = 2E Hex, Character = '%'. Tray = A4
Dynamic area size: 2048 bytes, 333 bytes used, 1715 bytes free.

Function 1:     is set to   4
Function 2:     is set to   6
Function 3:     is set to  10
Function 5:     is set to  66
Function 6:     is set to 132
Function 7:     is set to   1
Function 8:     is set to   0
Function 10:    is set to   0
Function 11:    is set to   2
Function 12:    is set to   1
Function 13:    is set to   1
Function 14:    is set to   1
Function 15:    is set to   5
Function 16:    is set to   8
Function 17:    is set to   1
Function 18:    is set to   1
Function 19:    is set to   0
Function 22:    is set to   5
Function 24:    is set to   0
Function 25:    is set to   0
Function 26:    is set to   1
Function 27:    is set to   0
Function 28:    is set to   0
Function 29:    is set to   0
Function 30:    is set to   1
Function 31:    is set to   1
Function 32:    is set to   0
Function 33:    is set to   0
Function 34:    is set to   1
Function 36:    is set to   0
Function 37:    is set to   1
Function 38:    is set to   1
Function 41:    is set to   1
Function 44:    is set to   1
Function 46:    is set to  12
Function 47:    is set to   1
Function 49:    is set to   0
Function 50:    is set to   0
Function 73:    is set to   0
Function 78:    is set to   1
Function 79:    is set to   0
Function 89:    is set to   0
Function 98:    is set to   1
Function 110:   is set to   1
Function 111:   is set to   0
Function 112:   is set to   0
Function 113:   is set to   1
Function 114:   is set to   0
Function 115:   is set to   1
Function 118:   is set to   0
Function 119:   is set to   0
Function 120:   is set to   0

BUSY TIMEOUT: 240
TIMEOUT COAX, C,RS: 20,20,20
```

```
Default GFID:
10 CPI= 11, 13 CPI = 204
12 CPI= 80, 20 CPI = 281,
15 CPI= 223, 27 CPI = 290
16 CPI = 253,
PROPORTIONALLY SPACED = 1412            AFP TOP MARG. = 0 : 0
ACTIVE GFID = 11                        AFP LEFT MARG. = 0 : 0

USER STRING #6 = 1B,26,6C,30,4F
USER STRING #7 = 1B,45

IBM Setup String(s):
130 1B,28,73,33,42
131 1B,28,73,30,42

BARCODES: 39,3,2;29,3,2;28,3,2;26,3,2;35,3,2;24,3,2;33,3,2;22,3,2
```

FSL Test Printout

Xerox FS 3270 FSL, Version: S10 xxx.xxx /00964002

```
Boot ID: 80010004
Temporary Escape code = 2E Hex, Character = '%'. Tray =A4
There are 2048 bytes available in the dynamic area.
299 bytes are in use, and 1749 bytes are free.
Function 1:     is set to   4
Function 2:     is set to   6
Function 3:     is set to  10
Function 4:     is set to   1
Function 5:     is set to  72
Function 6:     is set to 132
Function 7:     is set to   1
Function 8:     is set to   1
Function 9:     is set to   1
Function 11:    is set to   1
Function 14:    is set to   0
Function 15:    is set to   5
Function 16:    is set to   8
Function 17:    is set to   1
Function 18:    is set to   1
Function 24:    is set to   0
Function 25:    is set to   0
Function 26:    is set to   0
Function 27:    is set to   0
Function 28:    is set to   0
Function 29:    is set to   0
Function 30:    is set to   0
Function 31:    is set to   0
Function 32:    is set to   0
Function 33:    is set to   0
Function 34:    is set to   0
Function 35:    is set to   0
Function 36:    is set to   0
Function 37:    is set to   1
Function 38:    is set to   1
Function 39:    is set to   0
Function 44:    is set to   0
Function 46:    is set to  12
Function 47:    is set to   1
Function 49:    is set to   0
Function 50:    is set to   0
Function 55:    is set to   1
Function 89:    is set to   0
Function 100:   is set to  20
Function 120:   is set to   0

BUSY TIMEOUT: 240
TIMEOUT COAX, C,RS: 20,20,20
No user strings are sent at power on.
No user strings are sent after printer error.
No user strings are sent at user programming error.
No user strings are sent before local copy.
No user strings are sent after local copy.
Password is not activated.
```

Appendix A: Quick Reference Guide to FSL Functions

* = Factory Default ** = Factory Default (US)

No.	Name	Syntax	Parameters	Deviations
1	Buffer Size	%Y1,<n1>%	1 = 960 characters 2 = 1920 characters 3 = 2560 characters *4 = 3440 characters 5 = 3564 characters	FSL: N/S
2	LPI	%Y2,<n1>%	0 = USER: No LPI AUTO: Ignored 3 = 3 LPI 4 = 4 LPI *6 = 6 LPI 8 = 8 LPI For an explanation of USER and AUTO modes, see the "Laser 3270 Programmer's Guide"	FSL: N/S FSL: N/S FSL: N/S
3	CPI	%Y3,<n1>%	0 = USER: No CPI AUTO: Prop. spacing *10 = 10 CPI 12 = 12 CPI 15 = 15 CPI 16 = 16.7 CPI 20 = 20 CPI 27 = 27 CPI	FSL: N/S FSL: N/S FSL: N/S
4	Line Spacing	%Y4,<n1>%	*1 = Single Space 2 = Double space	**Y4:** PCL only
5	Form Length	%Y5,<n1>%	0 = Disable vertical formatting 001 to 255 = Set FL in no. of lines	*72 FSL *66 PCL **66 FSL **62 PCL
6	Maximum Print Position	%Y6,<n1>%	0 = No NLs will be generated by the interface 001 to 255 = Set MPP in no. of characters *132	
7	Case	%Y7,<n1>%	0 = Mono case (left to right) *1 = Dual case (left to right) 2 = Right to left (dual case) 3 = Left to right (dual case)	

No.	Name	Syntax	Parameters	Deviations
8	LU1 Language	%Y8,<n1>%	*0 = Download LU1 language from CU 1 = English US EBCDIC 3 = Austrian/ German 4 = Belgian 5 = Brazilian 6 = Canadian (French) 7 = Danish/ Norwegian 8 = Danish/ Norwegian Alt 9 = Finnish/ Swedish 10 = Finnish/ Swedish Alt 11 = French 13 = Austrian/ German Alt 14 = International 15 = Italian 16 = Japanese (English) 19 = Spanish 20 = Spanish Alt 21 = Spanish speaking 22 = English UK 28 = Portuguese 30 = French 105-charact. 31 = Swiss German/ French 40 = Spanish Data/ Text	*0=PCL *1=FSL
9	Print Quality	%Y9,<n1>%	*1 = Draft Print Quality 2 = Near Letter Quality 3 = Correspondence	**Y9:** FSL only

No.	Name	Syntax	Parameters	Deviations
10	Page Format	%Y10,<n1>[,n2]%	**n1** *0 = Portrait 1 = Landscape 2 = COR 1 3 = Fit to page in portrait 4 = 8" x 11" Portrait 5 = 8" x 12" Portrait 6 = 13.2" x 8.5" Landscape 7 = Landscape 13.2" 8 = Portrait 10 cpi x 11" 9 = Portrait 10 cpi z 12" **n2** 1 = Tractor (Upper) 2 = Drawer 1 (Upper) 3 = Drawer 2 (Lower) 4 = Manual feeder 5 = Envelope feeder 6 = Drawer 3 (Lower)	**Y10:** PCL only
11	Paper Path	%Y11,<n1>%	0 = Ignore PPM and select tray from printer front panel 1 = Tractor (Upper) *2 = Drawer 1 3 = Drawer 2 4 = Manual feeder 5 = Envelope feeder 6 = Drawer 3	FSL: N/S 1=FSL 2=PCL FSL: N/S FSL: N/S FSL: N/S

No.	Name	Syntax	Parameters	Deviations
12	Paper Size	%Y12,<n1>[,n2]%	**n1** *1 = A4 2 = Legal **3 = Letter 4 = Executive 5 = Letter (Monarch) 6 = Business (Com 10) 7 = International DL 8 = International C5 10 = A3 **n2** 1 = Tractor (Upper) 2 = Drawer 1 (Upper) 3 = Drawer 2 (Lower) 4 = Manual feeder 5 = Envelope feeder 6 = Drawer 3 (Lower)	**Y12:** PCL only
13	Line Overflow Option	%Y13,<n1>[,n2]%	**n1** 0 = Lines longer than print line are **wrapped**. Overflow data on next line. *1 = Lines longer than print line are **cut**. Overflow data is not printed. **n2** 1 = Tractor (Upper) 2 = Drawer 1 (Upper) 3 = Drawer 2 (Lower) 4 = Manual feeder 5 = Envelope feeder 6 = Drawer 3 (Lower)	**Y13:** PCL only
14	Enable Graphics	%Y14,<n1>%	0 =Disable graphics *1 =Enable graphics 2 =Disable graphics (and no error detection at mode changes) 3 =Enable graphics (and no error detection at mode changes)	0=FSL 1=PCL FSL: N/S FSL: N/S

No.	Name	Syntax	Parameters	Deviations
15	Baud Rate for Serial Input	%Y15,<n1>%	**n1** 0 = 300 Baud 1 = 600 Baud 2 = 1200 Baud 3 = 2400 Baud 4 = 4800 Baud *5 = 9600 Baud 6 = 19200 Baud	
16	No. of Data Bits for serial input	%Y16,<n1>%	**n1** 7 = 7 bits *8 = 8 bits	
17	Parity for serial input	%Y17,<n1>%	**n1** 0 = odd parity *1 = no parity 2 = even parity	
18	No. of Stop Bits for serial input	%Y18,<n1>%	**n1** *1 = 1 stop bit 2 = 2 stop bit	
19	Duplex Printing	%Y19,<n1>%	*0 = Simplex 1 = Long-edge duplex 2 = Short-edge duplex	**Y19:** PCL only
22	Printer Driver Selection	%Y22,<n1>%	*5 = PCL 5 driver. Disable ida AFP query. 15 = PCL 5E driver Enable ida AFP query.	**Y22:** PCL only
24	Interface Selection	%Y24,<n1>%	*0 = Port 0 1 = Port 1	
25	FF before Local Copy	%Y25,<n1>%	*0 = No FF 1 = FF	

No.	Name	Syntax	Parameters	Deviations
26	FF after Local Copy	%Y26,<n1>%	0 = No FF *1 = FF	0=FSL 1=PCL
27	Non-SCS Print Image	%Y27,<n1>%	*0 = Null line suppression in Local Copy and non-SCS print. 1 = Null line suppression in non-SCS print and true screen image in Local Copy 2 = True screen image in non-SCS print and null line suppression in Local Copy 3 = True screen image in non-SCS print and Local Copy 4 = Null line suppression and formatted print in LU3 print and in Local Copy 5 = Null line suppression and formatted print in LU3 print. Null line suppression and unformatted print in Local Copy. 6 = Null line suppression and unformatted print in LU3 print. Null line suppression and formatted print in local copy. 7 = Null line suppression and unformatted print in LU3 print and in local copy.	
28	CR at MPP +1	%Y28,<n1>%	*0 = 1st PP of next line 1 = 1st PP of current line	

No.	Name	Syntax	Parameters	Deviations
29	NL at MPP +1	%Y29,<n1>%	*0 = 1st PP of current line + 2 lines 1 = 1st PP of next line	
30	Valid FF Followed by Data	%Y30,<n1>%	0 = 2nd of 1st line of next form *1 = 1st PP of 1st line of next form	0=FSL 1=PCL
31	Valid FF at End of Print Buffer	%Y31,<n1>%	0 = 1st PP of 2nd line of next form *1 = 1st PP of 1st line of next form	0=FSL 1=PCL
32	FF Valid	%Y32,<n1>%	*0 = FF valid only at 1st PP in line or MPP+1 1 = FF valid anywhere	
33	Automatic Function at End of Job	%Y33,<n1>%	*0 = NL at 1st PP of next line 1 = 1st PP at 1st line of next form	
34	Last LF on Page Sent as FF	%Y34,<n1>%	0 = No *1 = Yes, count lines in FSL 5 and send FF	*0: FSL *1: PCL
35	FF Usage	%Y35,<n1>%	*0 = Pass FF from Host 1 = Count the lines in function 5	**Y35:** FSL only
36	Suppress IBM Control Codes	%Y36,<n1>%	*0 = Respect all IBM codes 1 = Suppress all IBM codes	

No.	Name	Syntax	Parameters	Deviations
37	IBM Printer Emulation Select	%Y37,<n1>%	0 = 3287 Emulation *1 = 3268/4214 Emulation 2 = HEX 00-3F sent transparently except valid SCS codes. TRN sent non-transparently 4 = HEX 00-3F sent as blanks except valid SCS codes. TRN sent trans-parently 6 = HEX 00-3F sent transparently except valid SCS codes. TRN sent transpar-ently 8 = Unprintable characters are suppressed ex-cept certain SCS codes (see Laser 3270 Pro-grammer's Guide for further de-tails.	
38	IBM Communi-cation Feature	%Y38,<n1>%	0 = No query reply, but EAB *1 = Query reply and EAB 2 = No query reply and no EAB	
39	Suppress Empty Forms	%Y39,<n1>%	*0 = No forms suppressed 1 = Empty forms suppressed	**Y39:** FSL only
41	Generation of New Line at End of Message	%Y41,<n1>%	*0 = Disable 1 = Enable	**Y41:** PCL only
44	Suppress CR and Spaces to Obtain Same Position	%Y44,<n1>%	0 = No suppression *1 = Suppression	0 = FSL *1 = PCL

No.	Name	Syntax	Parameters	Deviations
46	IRQ Time	%Y46,<n1>[,n2,n3]%	**n1** 000 = Never send IRQ 001 to 255 = Send IRQ after n1 x 5 seconds *12 Send IRQ after 1 minute **n2** 001 to 255 = Hold Time Out. Send Hold Time Out after n2 x 5 sec if printer is in stop mode. *120 **n3** 000 = Never send Busy Timeout IRQ 001 to 255 = Send Busy Timeout after n3 x 5 seconds if printer is in stop mode. *240	
47	ESC Mode Selection	%Y47,<n1>%	*1 = ESC xx sent as "xx" HEX 2 = Tel-A-Graf support 3 = Double escape feature	**Y47:** PCL only

No.	Name	Syntax	Parameters	Deviations
48	Permanent ESC Character Selection	%Y48,<n1>[;n2 [;n3]]% or %Y48,<xx>%	'char.' = character selected from the current IBM char. table in apostrophe notation xx = HEX value of the character selected from the LU3 table **n2** max. of 5 characters to introduce transparency (string must not begin w. '&' or char. defined in n1) lead-in sequence **n3** max. of 5 characters to end transparency invalid values: (0-9 and A-F) lead-out sequence *00	
49	Restrict Access of EEPROM/RAM	%Y49,<n1>[,n2]%	**n1** *0 = Unlock FSL 1 = Lock RAM and EEPROM 2 = Lock EEPROM only **n2** password optional	
50	FF after Time Elapse	%Y50,<n1>%	*0 = No extra FF is sent 1 to 255 = Send FF after (n1) seconds	
51	User-Defined String(s) at Power-Up	%Y51,<n1>%	0-7 = One or more strings defined in FSL 61 first	
52	User defined string(s) at power up/printer error	%Y52,<string no>%	0-7 = One or more strings indicated in the form <n1>,<n2>...<nx> in ascending sequence	**Y52:** FSL only

No.	Name	Syntax	Parameters	Deviations
53	User Defined string(s) before programming error message	%Y53,<n1>[n2],..]	0-7 = One or more strings indicated in the syntax	**Y53:** FSL only
54	User defined strings after programming error message	%Y54,<n1>,[,n2] [,...]	0-7 = One or more strings indicated in the form (n1),(n2)...,(nx)	**Y54:** FSL only
55	Bar Code Select	%Y55,<n1>%	0 = Disable bar code printing *1 = Enable bar code printing on graphics printers	**Y55:** FSL only
56	Bar Code Entry		Please see the chapter on Bar Code Printing in the "Laser 3270 Programmer's Guide" doc. no. D62078	**Y56:** FSL only
57	User-Defined String(s) before Local Copy	%Y57,<n1>% [,n2][,...]%	0-7 = One or more strings defined in FSL 61	
58	User-Defined String(s) after Local Copy	%Y58,<n1> [,n2][,...]%	0-7 = One or more strings defined in FSL 61	
59	Bar Code Type Definition	%Y59,<n1>,<n2>, <n3>,<n4>%	**n1** 1-8 = Bar code def. no. **n2** 22-39 = Bar code type **n3** 1-255 = Height in inches **n4** 1-32 = Horizontal expansion *1	**Y59:** PCL only
60	Font Link	%Y60,<n1>,<n2>%	**n1** 0,10,12,13,15,16,20, 27, CPI = pitch **n2** 1-65535 = GFID No.	**Y60:** PCL only

No.	Name	Syntax	Parameters	Deviations
61	Setup for User Defined Strings	%Y61,<n1>,<n2>%	**n1** 0-7 = User String no. **n2** 00-FF = String contents in HEX or in apostrophe notation	
62	Setup for IBM Defined Strings	%Y62,<n1>,<n2>%	Please refer to the "Laser 3270 Programmer's Guide" doc. no. D62078 for further information	
63	Logo Definitions	%Y63,n,<string> [;n<string>; <string>;n, <string>;....;n, <string>%	n = user defined logo number (0-7) string = user string in hex and/or characters with apostrophe notation	
71	Select Tranlate Table	%Y71,<n1>%	1-8 = Number of the translate table to be selected	**Y71:** FSL only
72	Reset Translate Table	%Y72,<n1>%	1-8 = Delete the indicated table	
73	Select Translate Table	%Y73,<n1>%	1-8 = Select the indicated table	
74	Define Printer Symbol Set Strings	%Y74,<n1>,<n2>%	*n1* 1-8 = Symbol set no. *n2* 00-FF = String contents in HEX	**Y74:** PCL only

No.	Name	Syntax	Parameters	Deviations
75	Overwrite Translate Table	**PCL:** %Y75,<n1>[,n2], <data>[:n1,n2, <data>]% **----------** **FSL:** %Y75,n1,n2[;n2]| [:n1,n2]%	**n1** 00-BF = LU3 position in HEX of character to be trans-lated **n2** 1-8 = Symbol set defined in FSL 74 **n3** 00-FF = Data in ASCII HEX required to print the character ---------- **n1** LU3 char. 00-BF = Specifies which LU3 characters to be translated to parameter n2 **n2(data)** 00-FF = ASCII code as the LU3 value shall be translated to. Can be defined as paired HEX up to 12 bytes, separated with commas.	**PCL mode** -------- **FSL mode**
76	Create APL Translate Table	%Y76,<n1>%	1-8 = Create an APL Translate Table	**Y76:** FSL only
77	Reset APL Translate Table	%Y77,<n1>%	1-8 = Reset the indicated APL table	
78	Select APL Translate Table	%Y78,<n1>%	1-8 = Select the indicated APL table	

No.	Name	Syntax	Parameters	Deviations
79	ida 820 AFP Font Offset	%Y79,<n1>%	0-200 = Offset to be added to the specified font *0 = No offset is added This function only needs to be changed from default if other applications are using the ida AFP font IDs.	**Y79:** PCL only
80	Overwrite APL Translate Table	%Y80,<n1>[,n2],<n3>%	**n1** 30-BF = The position in HEX of the APL character to be trans-lated **n2** 1-8 = Symbol set defined in FSL 74 **n3** 00-FF = Data in ASCII HEX required to print the character	

No.	Name	Syntax	Parameters	Deviations
88	Physical Margins	%Y88,<n1>,<n2>[,n3]%	**n1** 0 to 32000 = Horizontal margin compensation in 1/1440" *0 **n2** 0 to 32000 = Vertical margin compensation in 1/1440" *0 **n3** 0-9 = Page format as defined in FSL 10 20 = Support for front page in duplex 21 = Support for back page in duplex	
89	Physical Margin Compensation	%Y89,<n1>[,n2]%	**n1** *0 = No compensation 1 = Compensation as defined in FSL 88 **n2** 1 = Drawer 1 (Upper) 2 = Drawer 1 (Upper) 3 = Drawer 2 (Lower) 4 = Manual feeder 5 = Envelope feeder 6 = Drawer 3 (Lower)	
90	Define User ESC String Definition	%Y90,<n1>,<n2>%	**n1** 0 = Erase strings 00-FF = String no. in HEX **n2** '<string>' = String contents in apostrophe notation	

No.	Name	Syntax	Parameters	Deviations
91	Font Definition	%Y91,<n1>,<n2>, <n3>,<n4>,<n5> [,n6]%	**n1** *(IBM GFID)* 1-65535 = IBM GFID no. **n2** *(Typeface)* 0-255 = Pre-programmed typeface value **n3** *(Attribute)* 0 = No attributes 1 = Bold 2 = Italic 3 = Bold and Italic 4 = Proportional 5 = Prop. Bold 6 = Prop. Italic 7 = Prop. Bold and Italic **n4** *(Symbol Set)* *0-7* **n5** *(Point Size)* 1-65535 = Point size **n6** *(Translate Table)* 1-8 Optional	**Y91:** PCL only
92	Font Point Size Definition String	%Y92,<n1>,<n2>%	**n1** 10-255 = String no. in decimal **n2** 00-FF = String contents in HEX	**Y92:** PCL only
93	Font Attribute Definition String	%Y93,<n1>,<n2>%	**n1** 10-255 = String no. in decimal **n2** 00-FF = String contents in HEX	**Y93:** PCL only
94	Font Typeface Definition String	%Y93,<n1>,<n2>%	**n1** 10-255 = String no. in decimal **n2** 00-FF = String contents in HEX	**Y94:** PCL only

No.	Name	Syntax	Parameters	Deviations
96	Simulate Font Change	%Y96,<n1>	1-65535 = GFID No. in deci-mals *11	**Y96:** PCL only
98	Automatic Page Orientation APO)	%Y98,<n1>[,n2]%	**n1** 0 = Activate APO *1 = Deactivate APO 2 = Validate physical page **n2** 1 = Drawer 1 (Upper) 2 = Drawer 1 (Upper) 3 = Drawer 2 (Lower) 4 = Manual feeder 5 = Envelope feeder 6 = Drawer 3 (Lower)	**Y98:** PCL only
100	Port Sharing Option	%Y100,<n1>[,n2]%	**n1** 0-255 = Timeout in no. of seconds *20 **n2** 00-FF = String in HEX to be sent to printer before transmission of data when printer is selected by sharing unit	

No.	Name	Syntax	Parameters	Deviations
110	idaAFP Orientation Support Function tells idaAFP to send orienta-tion via query	%Y110,<n1>%	**n1** 0 = PCL5 Orientation Command suppressed *1= PCL5 Orientation Command supported	**Y110:** PCL only
111	idaAFP Duplex Support This function tells idaAFP to use the duplex facility in the printer. idaAFP is told to support duplex via query.	%Y111,<n1>%	**n1** *0 = Printer does not support duplex 1 = Printer supports duplex	**Y111:** PCL only
112	idaAFP PCL5 Font Support Via query, this function tells idaAFP to send PCL5 font commands.	%Y112,<n1>%	**n1** *0 = PCL5 Font not supported 1 = PCL5 Font is supported	**Y112:** PCL only

No.	Name	Syntax	Parameters	Deviations
113	idaAFP Early Print Complete This function enables the spool system to make a better recovery after errors.	%Y113,<n1>%	**n1** 0 = All is printed before response to host. *1 = Early print-complete supported	**Y113:** PCL only
114	idaAFP Colour Support	%Y114,<n1>%	**n1** *0 = No colour support available 1 = Support for colour printing 2 = Colour by simulation 9 = As 1, but with Pixel Placement Support 10 = As 2, but with Pixel Placement Support	**Y114:** PCL only
115	idaAFP Misc.	%Y115,<n1>%	**n1** 0 = No features covered by this FSL available *1 = Support for Unit selection in printer	**Y115:** PCL only
118	Expanded Printable Area	%Y118,<n1>%	IIPC Non-IIPC *0= Disabled Disabled 1= Enabled Disabled 2= Disabled Enabled 3= Enabled Enabled	**Y118:** PCL only
119	Auto-Configuration select	%Y119,<n1>%	**n1** *0 = Disable Auto-configuration 2 = Auto-configuration via PJL	**Y119:** PCL only

No.	Name	Syntax	Parameters	Deviations
120	Settings Print-Out at Power On	%Y120,<n1>%	**n1** *0 = Disable settings print-out at power on 1 = Enable settings printout at power on	
249	Enter Engineering Mode	%Y249,<n1>%	**n1** password (contact your local distributor)	
L	Send Logos	#Ln	0-7 = User Defined Logos	
T	Initiate Tests	%T#	1= Off-line hex dump 2= On-line hex dump 3= ASCII hex dump 4= Printout settings 5= Printout translate table 6= Cancel ASCII hex dump **Re. T2:** Please note that when using LU3 communication, it is not possible to make an online hex dump (with function T2) of data streams containing 3270 structured fields, e.g. GDDM print or ida 820 AFP.	
X	Save/ Overwrite Settings	%X#	1= Store RAM in EEPROM 2= Restore default 3= Factory default to RAM 4= Restore settings to power up defaults	
Z	Send User String	%Z#	0-7 = User strings defined in FSL 61	

No.	Name	Syntax	Parameters	Deviations
W	Send Bar Code	%W,n1,data%	**n1** Numeric value from 1-8 indicating the defined bar code number **data** Data must not exceed one line	**W:** PCL only

Appendix B: Using Serial OUT

Use of Xerox FS 3270 serial port

The following connections are available in the serial plug:

pin 1 NC
pin 2 RX data
pin 3 TX data
pin 4 DTR
pin 5 GND (Signal)
pin 6 DSR (Busy)
pin 7 RTS (always high)
pin 8 N.C.
pin 9 N.C.

Example: Cable connections to HP LaserJet III:

Xerox FS 3270
Cable type: DB9 male

HP LaserJet III
Cable type: DB25 male

pin 2: _____ pin 2
pin 3: _____ pin 3
pin 4: _____ pin 7
pin 5: _ |
_____ pin 20
pin 6: _ |
pin 7:

If the attached printer supports X_ON/X_OFF, you should use the following protocol for the simplest setup.
You only require the following cable:

For further information, please refer to the technical reference manual for the printer used.

Xerox FS 3270
Cable type: DB9 male

Printer ◄
Cable type: dB25 male

pin 2: _____ pin 2

pin 3: _____ pin 3

pin 5: _____ pin 7
pin 6: ___
pin 7: ___ |

Appendix C: Selected Xerox Products

Coax	Supported Printers
External	
Xerox LS 3270	Any Xerox decentralized PCL printer
Xerox FS 3270	Any Xerox decentralized PCL printer
Xerox Flex + Xerox 3270 PCL/XES	Any Xerox decentralized XES & PCL printer
External IPDS	
Xerox FS 3270 IPC	Any Xerox decentralized PCL printer
Internal	
Xerox 4500/3270	Xerox 4505, 4510, 4517, 4520
Xerox 4030/3270 XES/PCL	Xerox 4030, 4197
Xerox 4213/3270 XES/PCL	Xerox 4213
Internal IPDS	
Xerox 4500/3270 IPC	Xerox 4505, 4510, 4517, 4520
Xerox 4030/3270 IPC	Xerox 4030, 4197
Xerox 4213/3270 IPC	Xerox 4213
Twinax	**Supported Printers**
External	
Xerox LS 5250	Any Xerox decentralized XES & PCL printer
Xerox FS 5250	Any Xerox decentralized XES & PCL printer
Xerox Flex + Xerox 3x-400 PCL/XES	Any Xerox decentralized XES & PCL printer
External IPDS	
Xerox FS 5250 IPC	Any Xerox decentralized PCL printer
Internal	
Xerox 4500/3x-400	Xerox 4505, 4510, 4517, 4520
Xerox 4030/3x-400 XES/PCL	Xerox 4030 and 4197
Xerox 4213/3x-400 XES/PCL	Xerox 4213
Internal IPDS	
Xerox 4500/3x-400 IPC	Xerox 4505, 4510, 4517, 4520
Xerox 4030/3x-400 IPC	Xerox 4030 and 4197
Xerox 4213/3x-400 IPC	Xerox 4213
Token Ring	**Supported Printers**
External	
Xerox PS TR	Any Xerox decentralized printer
External SCS	
Xerox PS TR 3270	Any Xerox decentralized PCL printer
External SCS/DCA	
Xerox PS TR 5250	Any Xerox decentralized PCL printer
External IPDS	
Xerox PS IPC TR	Any Xerox decentralized PCL printer
Internal	
Xerox 4500 PS TR	Xerox 4505, 4510, 4517, 4520
Internal IPDS	
Xerox 4500 PS TR IPC	Xerox 4505, 4510, 4517, 4520
Ethernet	**Supported Printers**
External	
Xerox PS ETH	Any Xerox decentralized printer
External SCS	
Xerox PS ETH 3270	Any Xerox decentralized PCL printer
External SCS/DCA	
Xerox PS ETH 5250	Any Xerox decentralized PCL printer
External IPDS	
Xerox PS IPC ETH	Any Xerox decentralized PCL printer
Internal	
Xerox 4500 PS ETH	Xerox 4505, 4510, 4517, 4520
Internal IPDS	
Xerox 4500 PS ETH IPC	Xerox 4505, 4510, 4517, 4520